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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,562	01/11/2002	Mathias Popp	10015699-1	7936
22879	7590	08/31/2004	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			BATAILLE, PIERRE MICHE	
			ART UNIT	PAPER NUMBER
			2186	

DATE MAILED: 08/31/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/043,562

Applicant(s)

POPP, MATHIAS

Examiner

Pierre-Michel Bataille

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11, 14, 15, 18-20, 22-26 and 28-34 is/are rejected.
- 7) ☒ Claim(s) 7-10, 12, 13, 16, 17, 21 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is taken in response to applicant communication filed June 25, 2004 responding to the outstanding Office Rejection. Applicant's amendment and/or arguments have been considered with the results that follow.
2. Claims 1-34 are pending in the application under prosecution.

Response to Arguments

3. Applicant's arguments filed June 25, 2004 with respect to previously claims 1-6, 11, 14-15, 18-20, 22-26, and 28-34 have been fully considered but they are not deemed to be persuasive for at least the remarks below.

The examiner appreciates the overview of the applicant's present claimed invention on page 12 of the remarks and the problem solved by the applied prior (US 6,260,124 Crockett et al). After further review, the examiner finds the claims anticipated by Crockett as claim 1 broadly requires obtaining status information relating to at least one storage unit pair and monitoring mirroring conditions based upon status information obtained to determine status of the mirroring process.

The applied prior art (Crockett) features static synchronization and dynamic resynchronization of backup data involving a primary storage unit and a secondary or backup storage unit forming a mirroring storage unit. Under normal operations, a data mover mirrors data stored in primary storage to backup storage; this process is what is called synchronization (online mirroring or normal or instant synchronization). If an error

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condition arises, preventing instant mirroring, the data mover stores newly received data in primary storage without mirroring the data to backup storage (this process is what is called ressynchronization or programmed process to resynchronize after failure). The data mover performs a static resynchronization process, serving to update the backup storage when the error condition ends. And as new data is received during the resynchronization process, the process dynamically resynchronizes the newly received data records to backup storage in the proper order. (See abstract; Col. 2, Lines 21-51)

Crockett teaches monitoring error conditions preventing proper or instant mirroring of data from the primary storage to the secondary storage. Under these error conditions (failure to the backup storage, communication failure, etc.), the data mover stores any data records received by the storage system in the primary storage without mirroring the data records to the backup storage and also identifies the tracks that these data records are on in an update map. (See Col. 4, Lines 34-40; Col. 2, Lines 21-33)

Fig. 4 of Crockett clearly shows ONGOING MIRRORING process involving normal update 408 (instant mirroring from primary storage to backup storage) and dynamic resynchronization and if ongoing mirroring process is not indicated, i.e. an error has occurred and static synchronization is flagged after resolving the error. Crockett's system employs resynchronization flag, where data mover monitors the synchronization flag and updated status indicating whether a primary storage and a secondary storage are synchronized and, based on the synchronization status, (1) instantly mirrors data from the primary storage to secondary storage or (2)

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resynchronizes statically or dynamically the data from the primary to the backup storage (See Col. 2, Lines 13-41; Col. 4, Lines 1-48; Col. 5, Lines 10-24).

Crockett teaches the invention monitoring the ongoing mirroring process (408, Fig 1), which involves managing the mirroring of data from primary to backup storage where the step involves normal updating of the backup storage (in this case the mirroring process is brought online). Crockett moreover teaches the invention monitoring dynamic or static resynchronization (the mirroring process is programmed or configured to backup data when an error preventing the normal backup has been resolved) [See Col. 7, Lines 26-39; Col. 6, Lines 57-67].

In view of the above remarks, the rejection with respect to claims 1-6, 11, 14-15, 18-20, 22-26, and 28-34 is maintained and repeated below.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-6, 11, 14-15, 18-20, 22-26, and 28-34 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,260,124 (Crockett et al).

With respect to claims 1, 18, 22, and 31-32, Crockett discloses apparatus and method for monitoring conditions of a pair of storage units [(monitoring mirroring conditions during normal operations and resynchronization of a primary storage with a secondary storage after error conditions end); abstract; Col. 2, Lines 13-41; Col. 4, Lines 1-48], comprising: a database, adapted to store monitoring information for the storage unit and control unit (data mover with storage of synchronization flag and updated status indicating whether a primary storage and a secondary storage are synchronized) [Fig. 1; Col. 5, Lines 10-24], operatively connected to the database and adapted to obtain status information relating to the storage unit pair [(data mover to obtain synchronization status information) Col. 5, Lines 10-24], based on the stored monitoring information and adapted to automatically monitor mirroring conditions of the storage unit pair, based upon status information obtained, to automatically determine the status of the mirroring process between units of the storage unit pair [(data mover based on the synchronization status to mirror data from the primary storage to secondary storage) Col. 2, Lines 13-41; Col. 4, Lines 1-48]. Crockett further discloses method which may be implemented by operating the data mover, as embodied by a digital data processing apparatus 200, to execute a sequence of machine-readable instructions to perform the method to resynchronize backup storage to primary storage, ensuring that any updates received during resynchronization are applied in the proper order relative to resynchronization data [Col. 6, Lines 24-36].

With respect to claims 2-4, 19, 23-24, and 33, Crockett discloses the invention storing and monitoring information for at least one storage unit pair and automatically determining whether the mirroring process has been suspended and resynchronizing

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the mirroring process between units of the storage unit pair upon determining that the mirroring process has been suspended [(storing predetermined value in memory for the data mover to monitor state of synchronization, determine on-going or failed synchronization conditions and monitoring static synchronization after failed conditions thereby re-enabling mirroring) Col 7, Line 66 to Col. 8, Line 11].

With respect to claims 5-6, 15, 20, 25-26, and 34, Crockett discloses resynchronization occurring only upon determining that automatic resynchronization has been enabled with an auto-recover flag indicating automatic reconfiguration has been enabled [(static resynchronization flag indicating resynchronization is underway and indicating re-enabling mirroring of the primary storage and the backup storage) Col. 5, Lines 10-24; Col. 7, Lines 20-25].

With respect to claims 11, 14, 28-30, Crockett discloses storing monitoring information on a plurality of units wherein the monitoring information is remotely monitored with an interface for storing said monitoring information [(multiple controllers managing read/write operations at the primary storage and backup storage with each controller accessing updated map by asking whether static synchronization flag is set for static or dynamic synchronization mirroring the primary and backup storage) Col. 8, Lines 47-63].

Allowable Subject Matter

6. Claims 7-10, 12-13, 16-17, 21, 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

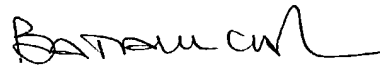
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre-Michel Bataille whose telephone number is (703) 305-0134. The examiner can normally be reached on Tue-Fri (7:30A to 6:00P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew M. Kim can be reached on (703) 305-3821. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Pierre-Michel Bataille
Primary Examiner
Art Unit 2186

August 30, 2004